VERMONT YANKEE
NUCLEAR POWER CORPORATION

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November 12, 1996
BVY 96-142

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Reference: (a) License No. DPR-28 (Docket No. 50-271)

Subject: Reportable Occurrence No. LER 96-027

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 96-027.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Robert J. Wanczyk
Plant Manager

cc: USNRC Region 1 Administrator
USNRC Resident Inspector - VYNPS
USNRC Project Manager - VYNPS

IE22

NRC Form 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
VERMONT YANKEE NUCLEAR POWER STATION	05000271	01 OF 04

TITLE (4) Lack of required verifications (document review and approval) results in inconsistency between Technical Specification instrument setting description and the as-built configuration of the LPCI Pump control logic.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NO.(S) 05000
10	12	96	96	-- 027 --	00	11	12	96	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)								
POWER LEVEL (10)	00		20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		(Specify in Abstract below or in NRC Form 366A)
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NO. (Include Area Code)
ROBERT J. WANCZYK, PLANT MANAGER	802-257-7711

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
NA				NO	NA				
NA					NA				

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MO	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 10/12/96 while performing Technical Specification (TS) required surveillance testing of the Low Pressure Coolant Injection (LPCI) system actuation logic, Vermont Yankee (VY) determined that literal compliance with TS could not be achieved with the as-built configuration of the LPCI Pump start logic. Specifically, the TS required a "0 second" time delay for an actuating relay in the affected pumps start circuitry, following restoration of power to the supplying bus. VY Instrument and Control personnel recognized that the system design employed time delay relays for the specified function which had a minimum setting of 0.55 seconds. Thus it was physically impossible to meet the TS requirement. The apparent cause of this event is an inadequate verification of the TS requirements against the system design. This appears to be an original plant design and licensing issue. VY replaced the affected relays with relays designed for instantaneous actuation. The 0.55 second time delay was bounded by all VY transient and accident analyses which consider the automatic start of the LPCI pumps. Therefore this inconsistency had no impact upon plant operation as analyzed and presented no threat to either the health or safety of the public.

DESCRIPTION OF EVENT

On 10/12/96 while shut down for refueling, during the performance of Technical Specification (TS) required surveillance testing of the Low Pressure Coolant Injection (LPCI, EIIS=BO) system actuation logic, VY determined that literal compliance with TS's could not be achieved with the as-built configuration of the LPCI Pump (EIIS=P) start logic. The issue was discovered during a detailed review of the RHR relay (EIIS=RLY2) functional test and calibration procedure precipitated by questions raised during its performance. Although the procedure required the indication of relay actuation to be "instantaneous" the technician detected a perceptible delay. The inconsistency was discovered as a result of questions raised by the implementing technician.

Specifically, the TS's required a "0 second" time delay for an actuating relay in the affected pumps start circuitry, following restoration of power to the supplying bus. VY Instrument and Control personnel recognized that the system design employed time delay relays for the specified function. Further they determined that the relays installed had a minimum setting of 0.55 seconds. Thus it was it was physically impossible to meet the TS requirement.

The non-conformance involved the first two LPCI pumps (one powered from each emergency electrical bus) that would auto start as a result of a loss of coolant accident (LOCA) signal coincident with a loss of off site power. The installed time delay relays exceeded the Technical Specification Table 3.2.1 specified value of 0 seconds for that start function.

The start sequence for the LPCI pumps in response to an accident signal depends upon the availability of power to the emergency buses. If normal power is available, all LPCI pumps start immediately and directly from the accident signal. If normal power is not available, the four LPCI pumps will automatically start in a predetermined sequence , after the associated Emergency Diesel Generator (EDG, EIIS=GEN) has powered the associated emergency bus. Two pumps will start immediately and two pumps approximately 5 seconds later. The timed starting sequence is provided to prevent overloading of the EDG's and to allow cessation of the effects of the first pump start on each power supply. Additional equipment is similarly sequenced on to the emergency buses to control load on the EDG's.

The time delay relays that were used to accomplish the predetermined loading sequence for all four LPCI pumps had a range of 0.55 - 15 seconds.

A review of past TS revisions demonstrates that the current time delay specification has been in place since initial TS issuance. The FSAR similarly describes a pump start with no time delay in section 7.4.3.5.2. and FSAR Table 7.4.4 lists a LPCI sequence delay of 0 seconds for the A and D pumps.

Further, recent communication with the plant designer indicates that time delay relays were typically used in this application in plants of VY's vintage. A review of plant records showed that had never been changed via the design change process. The originally installed time delay relays were simply replaced by a slightly different model time delay relay using the VY one-for-one process. This was an acceptable process for replacement of components with models of equivalent design. Thus, it is evident that time delay relays were installed in this application during original construction.

During the recent outage, these two relays were replaced with Agastat "instantaneous acting" relays.

CAUSES OF EVENT

Due to the age of this issue a root cause could not be determined. The apparent cause of the event was an inadequate verification of license requirements versus system design specifications. This is a cognitive error. A review of the original system design specifications from the design engineer (General Electric) and GE Standard Technical Specifications indicates the time delay relays were the correct components to be installed. The terminology chosen in VY Technical Specifications was overly restrictive and inconsistent with plant design.

Additional apparent causes for this event were inadequate disposition of periodic procedure review questions, and inadequate implementation of the applicable procedures.

The cause analysis process is continuing for this event. Any significant adjustments made to the cause determination or proposed corrective actions will be communicated in a supplement to this report.

ANALYSIS OF EVENT

The operational capability of LPCI was not challenged by this event. The system operating characteristics were at all times consistent with (bounded by) the accident and transient analyses.

Safety Significance

The VY Safety analysis was reviewed for this event and found to be conservative. FSAR Table 6.5.8 describes the operating characteristics assumed for LPCI in the performance of VY ECCS acceptance criteria verification per 10CFR50.46. That table demonstrates that VY assumes a total time delay of 23 seconds from the start of the Accident, indicating that the LPCI pumps are assumed to start (all 4) at 23 seconds into the accident as analyzed. This allows for a 13 second EDG start time (TS requirement) and 10 seconds for all the LPCI pumps to start. With 2 LPCI pumps starting at approximately 0.55 seconds and the remaining 2 at approximately 5 seconds after the EDG is powering the bus, all LPCI pumps should be running at approximately 18 seconds. This has been substantiated by ECCS integrated test results. The 0.55 second discrepancy in the start of the first LPCI pumps is enveloped by these assumptions. Therefore this inconsistency had no impact upon plant operation as analyzed and thus presented no threat to either the health or safety of the public.

CORRECTIVE ACTIONS

Immediate Actions:

1. The subject time delay relays were replaced with instantaneous acting relays appropriate for this application. This action is complete.

Long Term:

1. Document revisions will be initiated to reflect the change made per immediate corrective action number 1 (Expected completion date 03/30/97)

2. Vermont Yankee is currently implementing a major Technical Specifications improvement project. This process will systematically evaluate all sections of VY TS (expected submittal date: on or before 10/31/97).

   a. Any issues similar to this event will be addressed as part of this process

   b. This process will resolve identified discrepancies between plant design and Technical Specification requirements

   c. The TS improvement project will ensure that the specification for the actuation of the LPCI pump start relays includes appropriate setpoint tolerances.

VY Plant Management had recently initiated mandatory training sessions (completed in March of 1996) to heighten the sensitivity of the plant engineering support staff to the need for comprehensive reviews of procedural requirements against licensing basis requirements as part of the procedure review process. Similar training was required to be given to the Instrument and Control Technicians (completed in July of 1996). This heightened sensitivity to the need for exhaustive procedure reviews and consistent procedure upgrade, combined with stringent compliance to both licensing basis and individual procedural requirements contributed to the discovery and correction of this long standing deficiency.

Additionally, VY sees the current Event Report process as instrumental in the identification and proper disposition of this issue. The current process ensured that cited concerns and questions was captured and pursued in a manner commensurate with its significance. The ER process continues to ensure that this issue is formally tracked, and that the resolution is brought to completion.

ADDITIONAL INFORMATION

There have been no similar events reported to the Commission in the past five years.